Agriculture has a vital role to play in the coming decades with the world’s population estimated to reach 9.6 billion by 2050. With more mouths to feed but limited natural resources to draw on, the sector must find ways to produce additional food and fibre sustainably, while also contributing to broader development goals.

The Global Research Alliance on Agricultural Greenhouse Gases (GRA) is increasing cooperation and investment in research activities to help reduce the emissions intensity of agricultural production systems and increase their potential for soil carbon sequestration. The goals are to improve their efficiency, productivity, resilience, and adaptive capacity. This contributes in a sustainable way to overall mitigation efforts but also helps meet food security objectives.

Improving the quantification of agricultural greenhouse gas emissions under different management scenarios is also key to understanding best practice. Many countries already have research underway to better understand, measure, and manage agricultural greenhouse gases emissions. By linking up these efforts through the GRA, we can achieve faster progress towards the solutions needed for improving agricultural productivity and reducing its greenhouse gas emissions.
The GRA is a tremendous opportunity to be part of an initiative that is bringing together the world’s best in agricultural greenhouse gas emissions research and mitigation practices and technologies.

Climate change cannot be tackled by any country or research institution working alone.

GLOBAL RESEARCH ALLIANCE on Agricultural Greenhouse Gases

67 member countries*

4 research groups
- Paddy rice
- Croplands
- Livestock
- Integrative

More than 3,000 scientists involved in activities of the GRA

80 technical guidelines, resource materials and databases produced

53 technical training workshops held

18 science networks

*See back page for a list of member countries
The GRA is working together to provide knowledge and build capability for a better future.

The GRA has gone from strength to strength since its launch at COP15 in Copenhagen in 2009. The initial alliance of 28 countries has become truly global, with countries from all regions of the world now coming together to address the question of how best to ensure future food security, whilst minimising agriculture’s environmental footprint.

The Research Groups and Networks are led by representatives from a wide range of countries. Plus, the GRA Secretariat, supported by New Zealand, has grown to include staff based in Europe, Africa and Latin America.

As the GRA has grown, it has become increasingly recognised for its knowledge and expertise. Knowledge partnerships have been built with groups such as Pathways to Dairy Net Zero and the Agricultural Innovation Mission for Climate.

The GRA has also been involved in supporting LMIC countries to participate in international and regional research calls such as European Research Area Networks (ERA-NET), the European Joint Programme Cofund on Agricultural Soil Management (EJP SOIL) and the Regional Fund for Agriculture Technology in Latin America (FONTAGRO).

Growing more food without growing emissions has never been a more important goal. The GRA is working at all levels to build capacity and capability to drive towards this target.
Collaborative research projects are at the heart of the GRA’s work

They allow scientists to achieve results that would have been impossible working in isolation, for example by sharing data sets, harmonising measurements and methodologies, and pooling resources for analysing large numbers of samples or model inter-comparisons. Specific projects may be identified within Research Groups or Networks or at annual Council meetings, with participating countries then collaborating to source funding for the work. A significant number of projects have been completed to date, with more underway at present.

GRA online resources facilitate new ways of working together

Much of the GRA’s work relies on experts working together across boundaries to advance collective knowledge. A range of online resources have been created by researchers linking up to address critical knowledge gaps, analyse and improve data, standardise modelling assumptions, develop common protocols for measurement and find new ways of working together to advance shared priorities. Find examples here: globalresearchalliance.org/research/livestock/collaborative-activities

High-profile publications and technical manuals help to share knowledge

Scientific knowledge needs to be shared widely to lead to policy change, impact and action. The work of the GRA has led to a number of high-profile journal articles, review papers, good practice manuals and technical methodologies which are being recognised in the scientific community and beyond. Learn more here: globalresearchalliance.org/publication-library
GRA Flagship Projects

GRA Flagship Projects are developing new knowledge to better understand agricultural greenhouse gases, have global relevance and applicability and will generate high scientific impact.

These key priority projects have been identified as uniquely suited to the research expertise and global membership of the GRA. Flagship Projects are specific, time-bound projects that have been approved by the GRA Council. They are led by a community of experts within the GRA membership and there are opportunities for others to get involved. Learn more here: globalresearchalliance.org/flagship-projects

**Agroecology & Agroforestry to mitigate climate change**
Goal: To develop a portfolio of agroforestry and agroecology best practices, and their respective value chains, which are clearly linked to their capacity to increase carbon sequestration and/or reduce greenhouse gas emissions.

Led by: Spain

**Economics of cattle GHG mitigation (EMiFa)**
Goal: To identify the most cost-effective options for farm level GHG mitigation strategies in different global production systems and provide evidence-based policy recommendations.

Led by: Germany

**Ensuring long-term mitigation and adaptation co-benefits**
Goal: To develop and apply new protocol-based methods for providing national decision-makers with evidence-based knowledge to ensure agricultural mitigation strategies have lasting impact.

Led by: USA

**Feed additives to reduce methane**
Goal: To accelerate the development and use of feed additives to reduce global enteric methane emissions from livestock.

Led by: Spain & the Netherlands

**Mining rumen data to reduce methane**
Goal: To generate new knowledge on the rumen microbiome which will enable novel interventions to reduce methane emissions from livestock.

Led by: United Kingdom

**Reducing N₂O emissions and improving accounting**
Goal: To encourage global efforts to reduce GHG emissions from nitrogenous fertiliser by enabling its usage to be more accurately reflected in national level GHG accounting.

Led by: Chile

**Satellite monitoring to improve livestock management**
Goal: To develop globally applicable tools which improve management of grassland resources and support local initiatives to mitigate and adapt to climate change.

Led by: North America
Sharing knowledge and building the capabilities of researchers and technicians to measure, predict and report on greenhouse gas emissions from agricultural systems is a critical area of work for the GRA.

This takes place in a variety of ways including leading technical training workshops, establishing capability building projects, profiling research via webinars and coordinating fellowship and award schemes.

Award schemes enable students, technicians and scientists to undertake ‘on-the-job’ training and help seed new collaborative ideas. Two programmes are highlighted below. Learn more here: globalresearchalliance.org/awards-and-fellowships

**CLIFF-GRADS**

The Climate, Food and Farming, Global Research Alliance Development Scholarship (CLIFF-GRADS) is a joint initiative of the GRA and the CGIAR Mitigate+ programme. Since 2017, 176 PhD students, from 45 developing countries, have received awards to carry out research projects in different countries. 67 institutes from 35 countries have hosted CLIFF-GRADS to date.

**GRA-RUFORUM**

The GRA has partnered with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) in Africa to support Graduate Research Grants for Masters level projects for students studying agricultural GHGs. 8 awards, benefiting 22 students, were awarded in 2020.
The GRA Council is responsible for the governance of the organisation, with Research Groups driving the action. The four Research Groups carry out the work plan of the GRA by identifying opportunities, improving knowledge and sharing results. Much of the Research Groups' work relies on experts working across boundaries to advance collective knowledge. To support this goal, each Research Group supports Networks that focus on specific aspects of emissions research.

Additionally, in 2023, the GRA Council established the Mediterranean Agriculture Network, led by CIHEAM. This will provide an opportunity to promote a new mitigation paradigm among countries in the Mediterranean region and collaborate on joint projects and activities.

Learn more here: globalresearchalliance.org/community
Join the GRA!

Benefits of GRA membership include access to training and fellowships for early career scientists, awards and exchanges for senior scientists, research funds that encourage collaborative projects among member countries and partner organisations, participation in regional and topic specific science networks for researchers to share datasets and encouraging common measurement protocols.

Membership is open to any State represented by their competent authority (e.g. the nominated lead government department or agency). Participation in the GRA is on a voluntary basis, there is no cost to joining or annual membership fee. It is for each member to determine the nature and extent of its participation in any GRA activities.

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GRA member countries

Argentina
Australia
Bangladesh
Belgium
Benin
Bolivia
Brazil
Cameroon
Canada
Chile
China
Colombia
Costa Rica
Cote d’Ivoire
Cuba
DR Congo
Denmark
Dominican Republic
Ecuador
Egypt
Ethiopia
Fiji
Finland
France
Germany
Ghana
Honduras
Indonesia
Ireland
Italy
Japan
Kenya
Lithuania
Malawi
Malaysia
Mexico
Mongolia
Namibia
Netherlands
New Zealand
Nicaragua
Nigeria
Norway
Panama
Paraguay
Peru
Philippines
Poland
Republic of Korea
Samoa
Senegal
South Africa
Spain
Sri Lanka
Swaziland
Sweden
Switzerland
Thailand
Tunisia
Turkey
Uganda
United Kingdom
United States
Uruguay
Vietnam
Zambia
Zimbabwe